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Micro Energy Systems 23 – 25 April 2015*



# About Scene





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# Towards Resilience

- Scottish Government International Development Small Grants Fund
- Three year (2014-17) project to help address issue of solar PV system breakdown in Odisha, using ICT
  - Key innovation is use of SMS Gateway to manage value chain





# Towards Resilience

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- We have heard about:
  - Smart Metering
  - Smart Payment
  - Smart Grids
- But repair and maintenance often not smart enough
  - Product warranties main protection mechanism to end-user/PIA
  - Inefficient, expensive, non-local maintenance processes
  - Leads to 'stranded assets' (non-productive assets)



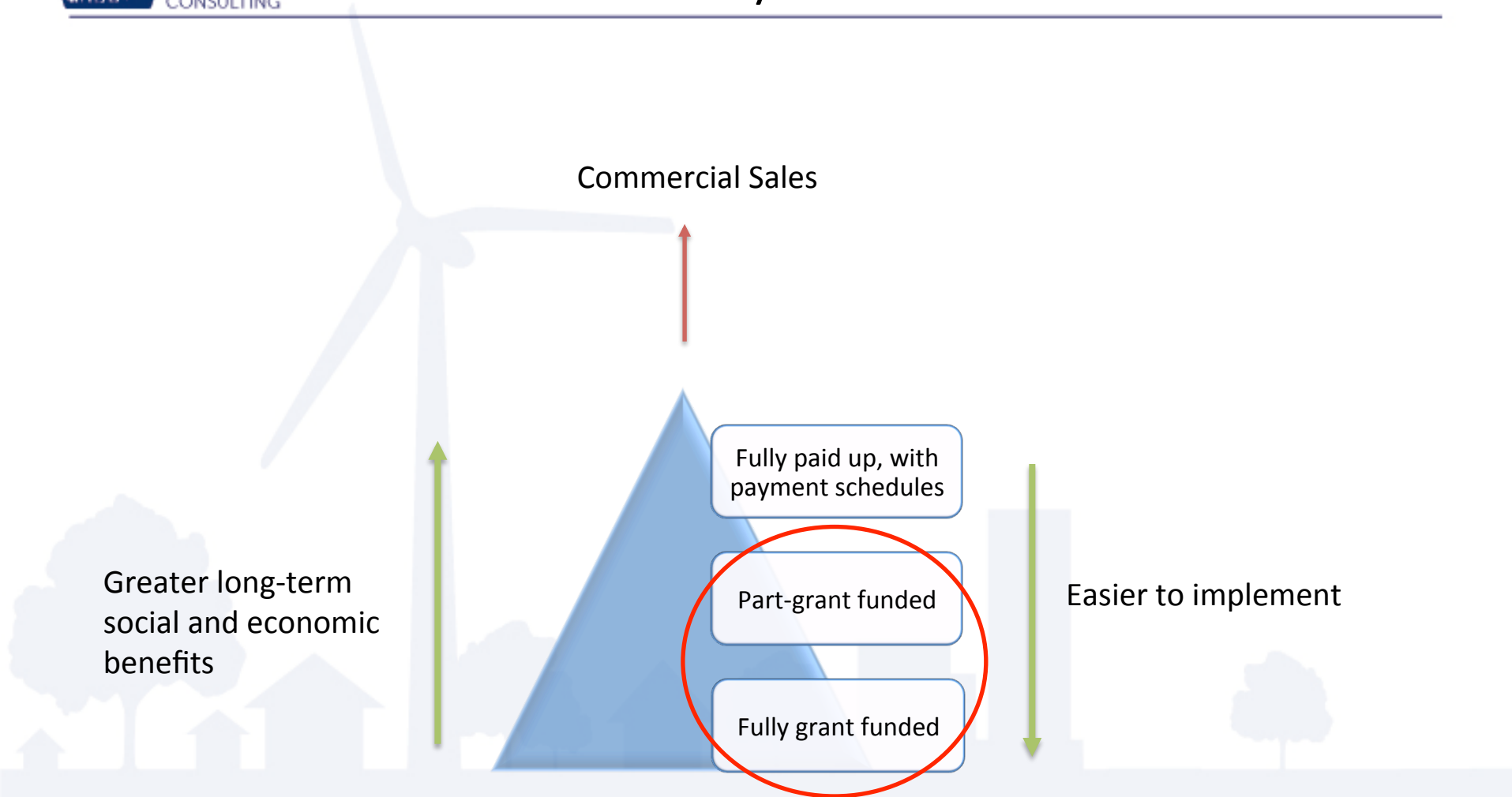
# Towards Resilience – Research Questions

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- Are designers, distributors and implementation agencies doing enough to ensure system longevity?
- How long should an externally implemented project be operational for?
- What happens when the system does break?
  - The electrified once more become the unelectrified

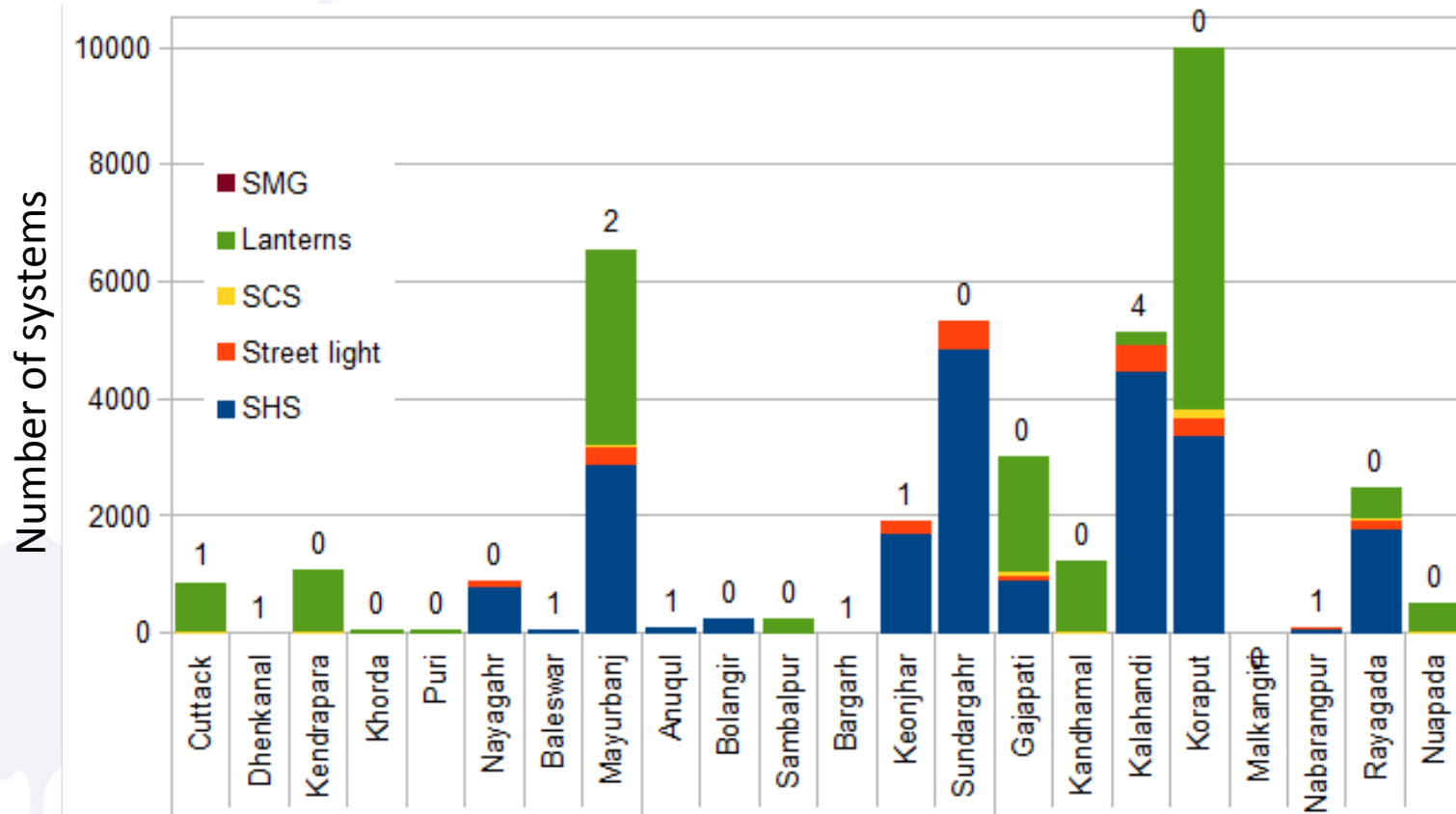


# Delivery Models





# Towards Resilience – Background Research



- Grant or part-grant, donor or govt. led installations in Odisha since 2006

# Problem Definition

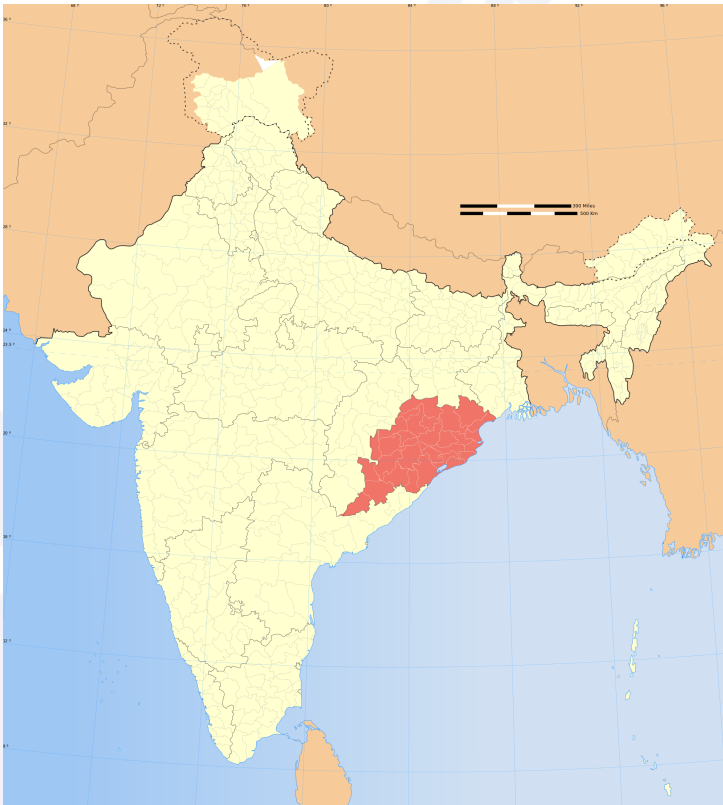
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- Projects are 'rolled-out' by donors and governments
  - ✓ Electrification
  - ✓ Rural development
  - ✓ Women's empowerment
  - ✓ Furthering of education
- But technology breaks
  - Increasing recognition of issues around maintenance and recycling
  - Lack of clarity over ownership & liability
  - End user capacities underutilised/misrepresented
  - Adequate supply chains and expertise are lacking
  - Ability/willingness to pay for upkeep is untested/low



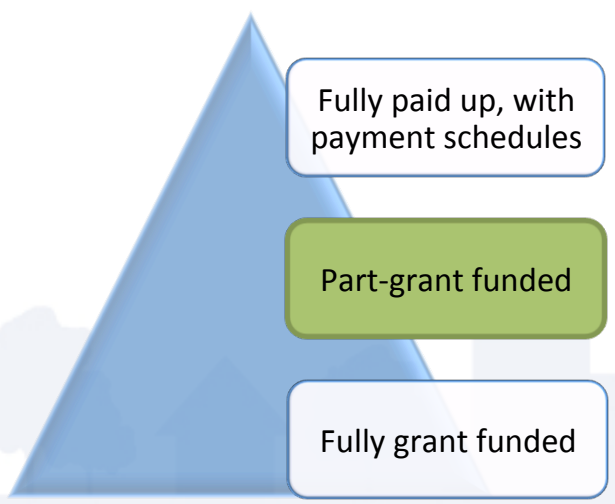
# Odisha: Our State of Interest

- Amongst poorest of Indian States
- ~45 Million people
- Energy access limited, improving through 'rapid expansion of grid'



# Project Examples: Part-Grant Funded

- Solar Charging Station
  - Total break down of many lanterns
  - Leads to break down in payment mechanism (entrepreneur in trouble)
  - Value chain not in place = inability to revive project without grant support



Fully paid up, with  
payment schedules

Part-grant funded

Fully grant funded





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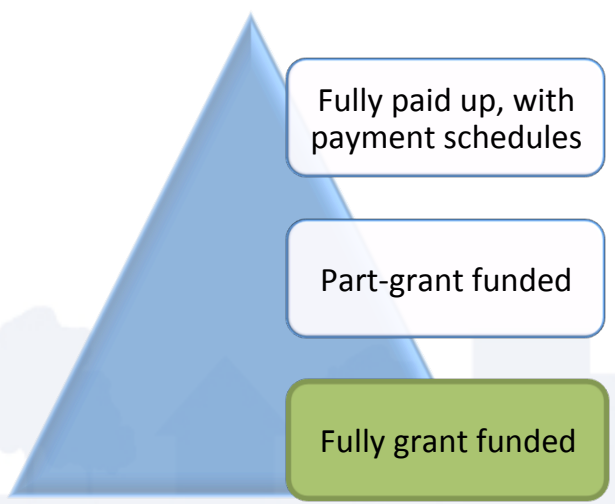


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# Project Examples: Fully Grant Funded

- Solar Home System
  - Grant funded = uncertainty over ownership
  - Unknown who the implementing agency is!
  - Value chain not in place = desire to revive project but don't know where to start



Fully paid up, with  
payment schedules

Part-grant funded

Fully grant funded



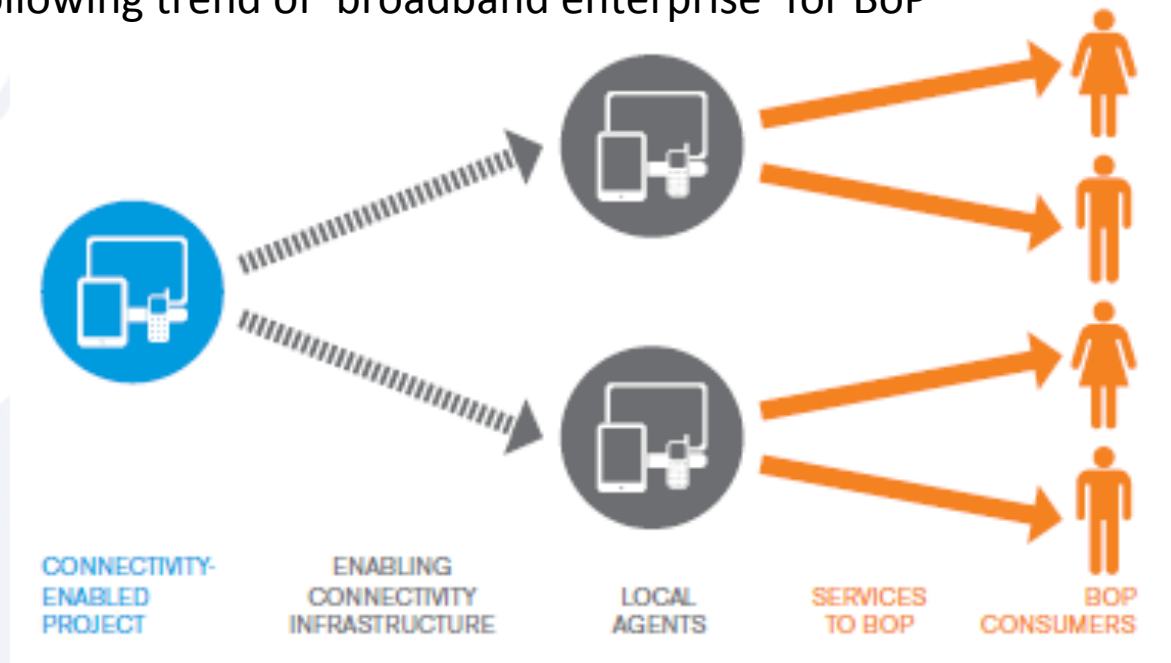
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- Our research has shown that a dedicated repair and maintenance enterprise may be viable
  - IF transaction costs can be minimised
- A Connected Enterprise for energy maintenance services to the 'base of the pyramid'
  - Following trend of 'broadband enterprise' for BoP



Technology: Web Platform

SMS & Data connectivity

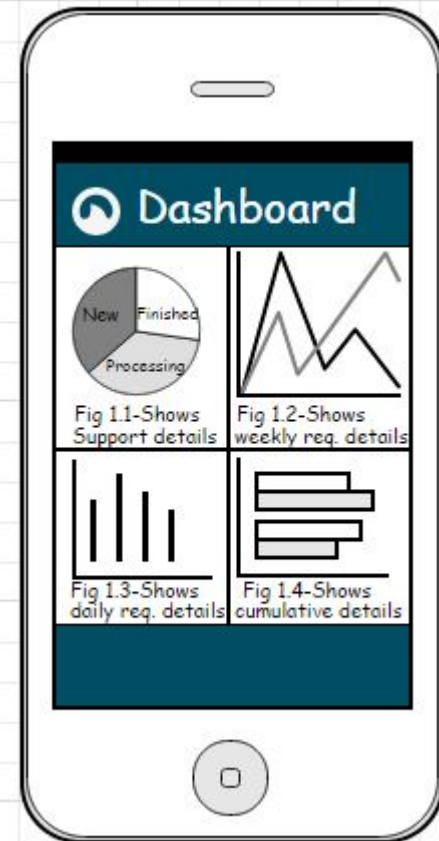
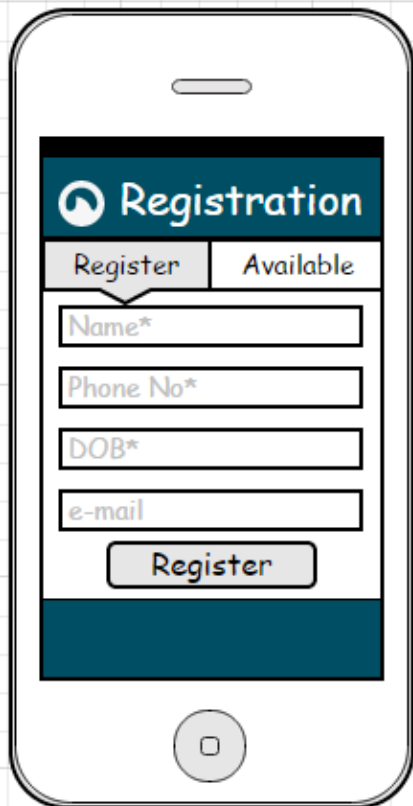
SMS

## The five pillars of Samadhan:

- **Trained Block-Level Entrepreneurs**
- **Structured Services and Price Transparency**
- **Communications**
- **Technology Inclusivity**
- **Finance**



# Urjaa Samadhan – SMS Gateway



Entrepreneur smart phone app

Mozilla

http://moqups.com

Search

Dashboard

Support Request

Entrepreneurs

Users

Feedback

MIS reports

New Requests

In Progress

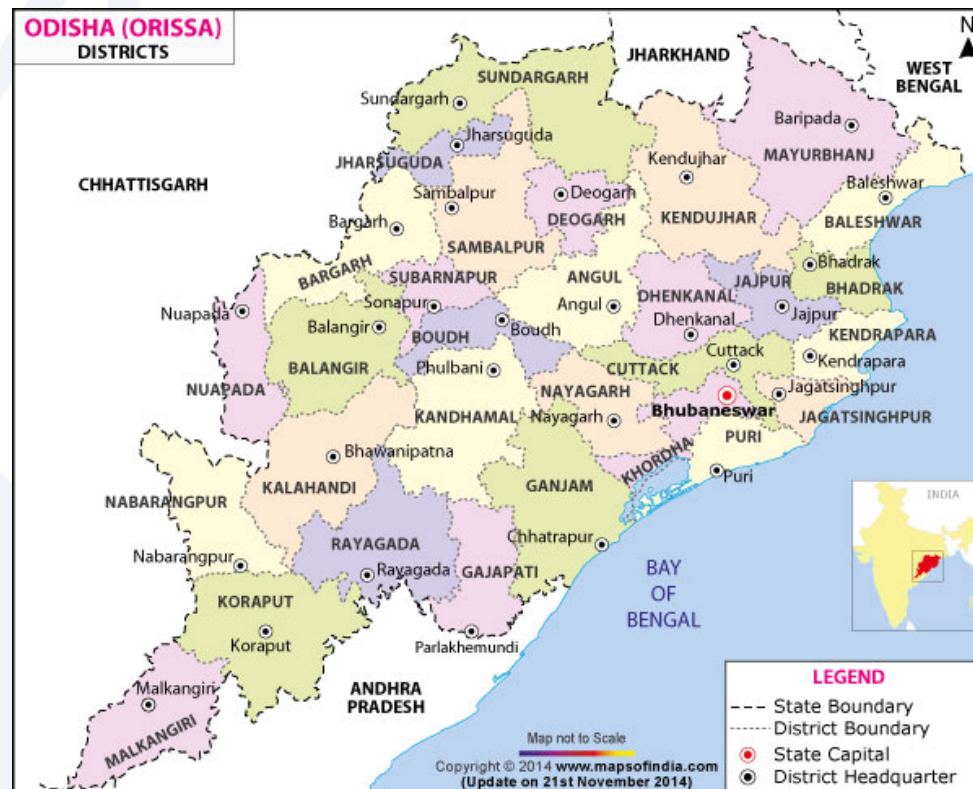
Resolved

Request ID	Mobile No	Name	Village	Block	Entrepreneur	Time	
100001	9861096961	Ansuman Roy	Demo Village	Similiguda	Mr Prakash Sahoo	05:22 PM-17-mar-2015	<input type="checkbox"/>
100002	+91-xxxxxxx	Ansuman Roy	Demo Village	Similiguda	Mr Prakash Sahoo	05:22 PM-17-mar-2015	<input type="checkbox"/>
100003	+91-xxxxxxx	Ansuman Roy	Demo Village	Similiguda	Mr Prakash Sahoo	05:22 PM-17-mar-2015	<input type="checkbox"/>
100004	+91-xxxxxxx	Ansuman Roy	Demo Village	Similiguda	Mr Prakash Sahoo	05:22 PM-17-mar-2015	<input type="checkbox"/>
100005	+91-xxxxxxx	Ansuman Roy	Demo Village	Similiguda	Mr Prakash Sahoo	05:22 PM-17-mar-2015	<input type="checkbox"/>
100006	+91-xxxxxxx	Ansuman Roy	Demo Village	Similiguda	Mr Prakash Sahoo	05:22 PM-17-mar-2015	<input type="checkbox"/>
100007	+91-xxxxxxx	Ansuman Roy	Demo Village	Similiguda	Mr Prakash Sahoo	05:22 PM-17-mar-2015	<input type="checkbox"/>

Central web dashboard

## Next steps

- SMS Gateway technology in development
- Training design in progress
- Pilot planned for early 2016 in 2 districts





# Conclusions

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- Technology breakdown is a recognised challenge
- Use of ICTs offers efficiency gains in service provision
- A dedicated aftersales enterprise may be scalable and viable
- The technology developed is innovative in the energy field
  - Lessons learned from health, agriculture & water
- We are seeking collaborators who recognise these issues

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